

QBOX-1010

0.6-Liter Fanless Box PC with Intel® Atom Processor N270

User's Guide



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Quanmax reserves the right to make changes without notice in product or component design as warranted by evolution in user needs or progress in engineering or manufacturing technology.

Changes which affect the operation of the unit will be documented in the next revision of this user's guide.

Revision	Date	Edited by	Changes
1.0	09/22/2009	SLee	Initial Release
1.1	12/16/2009	SLee	Correct RS232/422/485 pin assignment
1.2	06/09/2010	Zack	Update Operating Temp. from 0~35C to 0~40C
1.3	11/18/2011	Zack	Update P.36 sample code

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Safety Instructions

■ Before You Begin

Before handling the product, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety. Refer to the “Advisories” section in the Preface for advisory conventions used in this user’s guide, including the distinction between Warnings, Cautions, Important Notes, and Notes.

- Always use caution when handling/operating a computer. Only qualified, experienced, authorized electronics service personnel should access the interior of a computer. The power supplies produce high voltages and energy hazards, which can cause bodily harm.
- Use extreme caution when installing or removing components. Refer to the installation instructions in this user’s guide for precautions and procedures. If you have any questions, please contact Quanmax Post-Sales Technical Support.
- Access can only be gained by service persons or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and access is through the use of a tool or lock and key, or other means of security, and is controlled by authority responsible for the location.

WARNING



High voltages are present inside the chassis when the unit’s power cord is plugged into an electrical outlet. Turn off system power, turn off the power supply, and then disconnect the power cord from its source before removing the chassis cover. Turning off the system power switch does not remove power to components.



The product chassis may be hot when the system is working. Please do not touch the surface before turn off the system power and wait for about 5 minutes until the system cools down.

■ When Working Inside a Computer

Before taking covers off a computer, perform the following steps:

1. Turn off the computer and any peripherals.
2. Disconnect the computer and peripherals from their power sources or subsystems to prevent electric shock or system board damage. This does not apply when hot swapping parts.
3. Follow the guidelines provided in “Preventing Electrostatic Discharge” on the following page.
4. Disconnect any telephone or telecommunications lines from the computer.

In addition, take note of these safety guidelines when appropriate:

- To help avoid possible damage to system boards, wait five seconds after turning off the computer before removing a component, removing a system board, or disconnecting a peripheral device from the computer.
- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs. If you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before connecting a cable, make sure both connectors are correctly oriented and aligned.

CAUTION



Do not attempt to service the system yourself except as explained in this user's guide.
Follow installation and troubleshooting instructions closely.

■ Preventing Electrostatic Discharge

Static electricity can harm system boards. Perform service at an ESD workstation and follow proper ESD procedure to reduce the risk of damage to components. Quanmax strongly encourages you to follow proper ESD procedure, which can include wrist straps and smocks, when servicing equipment.

You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component's antistatic packing material until you are ready to install

the component in a computer. Just before unwrapping the antistatic packaging, be sure you are at an ESD workstation or grounded. This will discharge any static electricity that may have built up in your body.

- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components at an ESD workstation. If possible, use antistatic floor pads and workbench pads.
- Handle components and boards with care. Don't touch the components or contacts on a board. Hold a board by its edges or by its metal mounting bracket.
- Do not handle or store system boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

■ Instructions for Lithium Battery



WARNING

Danger of explosion when battery is replaced with incorrect type. Only replace with the same or equivalent type recommended by the manufacturer.

Do not dispose of lithium batteries in domestic waste. Dispose of the battery according to the local regulations dealing with the disposal of these special materials (e.g. to the collecting points for disposal of batteries)

■ Voltage Ratings

The external power adaptor of the QBOX-1010 has the following voltage ratings:

- Input: 100-240 VAC, 50-60 Hz
- Output: 30W, 12VDC , 2.5A

Power Supplies:

Touch Electronic Co Ltd / SA06-30S12R-W

Preface

■ How to Use This Guide

This guide is designed to be used as step-by-step instructions for installation, and as a reference for operation, troubleshooting, and upgrades.

NOTE



Driver downloads and additional information are available under Downloads on our web site: www.quanmax.com.

■ Unpacking

When unpacking, follow these steps:

1. After opening the box, save it and the packing material for possible future shipment.
2. Remove all items from the box. If any items listed on the purchase order are missing, notify Quanmax customer service immediately.
3. Inspect the product for damage. If there is damage, notify Quanmax customer service immediately. Refer to “Warranty Policy” for the return procedure.

■ Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices.

FCC Compliance Statement:

This equipment has been tested and found to comply with limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radiofrequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause

interference to radio or television equipment reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by Quanmax could void the user's authority to operate the equipment.

NOTE



The assembler of a personal computer system may be required to test the system and/or make necessary modifications if a system is found to cause harmful interference or to be noncompliant with the appropriate standards for its intended use.

■ Warranty Policy

Limited Warranty

Quanmax Inc.'s detailed Limited Warranty policy can be found under Support at www.quanmax.com. Please consult your distributor for warranty verification.

The limited warranty is void if the product has been subjected to alteration, neglect, misuse, or abuse; if any repairs have been attempted by anyone other than Quanmax or its authorized agent; or if the failure is caused by accident, acts of God, or other causes beyond the control of Quanmax or the manufacturer. Neglect, misuse, and abuse shall include any installation, operation, or maintenance of the product other than in accordance with the user's guide.

No agent, dealer, distributor, service company, or other party is authorized to change, modify, or extend the terms of this Limited Warranty in any manner whatsoever.

Quanmax reserves the right to make changes or improvements in any product without incurring any obligation to similarly alter products previously purchased.

Return Procedure

For any Limited Warranty return, please contact Support at www.quanmax.com and login to obtain a Return Material Authorization (RMA) Number. If you do not have an

account, send an email to support@quanmax.com to apply for one.

All product(s) returned to Quanmax for service or credit must be accompanied by a Return Material Authorization (RMA) Number. Freight on all returned items must be prepaid by the customer who is responsible for any loss or damage caused by common carrier in transit. Returns for Warranty must include a Failure Report for each unit, by serial number(s), as well as a copy of the original invoice showing the date of purchase.

To reduce risk of damage, returns of product must be in a Quanmax shipping container. If the original container has been lost or damaged, new shipping containers may be obtained from Quanmax Customer Service at a nominal cost. Quanmax owns all parts removed from repaired products. Quanmax uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Quanmax repairs or replaces a product, its warranty term is not extended.

Shipments not in compliance with this Limited Warranty Return Policy will not be accepted by Quanmax.

Limitation of Liability

In no event shall Quanmax be liable for any defect in hardware, software, loss, or inadequacy of data of any kind, or for any direct, indirect, incidental, or consequential damages in connection with or arising out of the performance or use of any product furnished hereunder. Quanmax's liability shall in no event exceed the purchase price of the product purchased hereunder. The foregoing limitation of liability shall be equally applicable to any service provided by Quanmax or its authorized agent.

■ Maintaining Your Computer

Environmental Factors

■ Temperature

The ambient temperature within an enclosure may be greater than room ambient temperature. Installation in an enclosure should be such that the amount of air flow required for safe operation is not compromised.

Consideration should be given to the maximum rated ambient temperature.

Overheating can cause a variety of problems, including premature aging and failure of chips or mechanical failure of devices.

If the system has been exposed to abnormally cold temperatures, allow a two-hour warm-up period to bring it up to normal operating temperature before

turning it on. Failure to do so may cause damage to internal components, particularly the hard disk drive.

■ **Humidity**

High-humidity can cause moisture to enter and accumulate in the system. This moisture can cause corrosion of internal components and degrade such properties as electrical resistance and thermal conductivity. Extreme moisture buildup inside the system can result in electrical shorts, which can cause serious damage to the system.

Buildings in which climate is controlled usually maintain an acceptable level of humidity for system equipment. However, if a system is located in an unusually humid location, a dehumidifier can be used to maintain the humidity within an acceptable range. Refer to the “Specifications” section of this user’s guide for the operating and storage humidity specifications.

■ **Altitude**

Operating a system at a high altitude (low pressure) reduces the efficiency of the cooling fans to cool the system. This can cause electrical problems related to arcing and corona effects. This condition can also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or perform at reduced efficiency.

Power Protection

The greatest threats to a system’s supply of power are power loss, power spikes, and power surges caused by electrical storms, which interrupt system operation and/or damage system components. To protect your system, always properly ground power cables and one of the following devices.

■ **Surge Protector**

Surge protectors are available in a variety of types and usually provide a level of protection proportional with the cost of the device. Surge protectors prevent voltage spikes from entering a system through the AC power cord. Surge protectors, however, do not offer protection against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.

■ **Line Conditioner**

Line conditioners go beyond the overvoltage protection of surge protectors.

Line conditioners keep a system's AC power source voltage at a fairly constant level and, therefore, can handle brownouts. Because of this added protection, line conditioners cost more than surge protectors. However, line conditioners cannot protect against a complete loss of power.

■ **Uninterruptible Power Supply**

Uninterruptible power supply (UPS) systems offer the most complete protection against variations on power because they use battery power to keep the server running when AC power is lost. The battery is charged by the AC power while it is available, so when AC power is lost, the battery can provide power to the system for a limited amount of time, depending on the UPS system.

UPS systems range in price from a few hundred dollars to several thousand dollars, with the more expensive units allowing you to run larger systems for a longer period of time when AC power is lost. UPS systems that provide only 5 minutes of battery power let you conduct an orderly shutdown of the system, but are not intended to provide continued operation. Surge protectors should be used with all UPS systems, and the UPS system should be Underwriters Laboratories (UL) safety approved.

Chapter 1

Introduction

■ Overview

The QBOX-1010 is a fan-less Box PC with a volume of just 0.6-liter that is ideal for space critical applications. This embedded hardware platform is designed with Intel® Atom N270 Processor which provides with excellent performance enabled by next- generation 45nm Process Technology. The system is supported with Intel® 945GSE /ICH7-M chipset, and DDR2 SO-DIMM up to 2GB. Featured are an eSATA, 1x 2.5" SATA HDD or 1x Internal Compact Flash Type II slot, GbE, USB 2.0, DVI-I, 2x COMs and Digital I/Os.

The QBOX-1010 provides high reliability rugged case not only for great protection from EMI, cold and heat, but also integrated with passive cooling design for quiet fan-less operation such as Transportation, Surveillance and Automation.

Checklist

- 1x QBOX-1010
- 1x Power Adapter
- 1x Power Cord
- 1x Driver CD
- 1x Quick installation Guide
- *Optional VESA Mounting Kit
(with 4x M4X6 flat head screws)*
- *Optional DIN-Rail Mounting Kit
(with 3x M3X4 flat head screws and 3x M3x6 round head screws)*

Features

- Fan-less Design and 0.6-Liter Compact Sized
- Intel® Atom Processor N270
- Intel® 945GSE + ICH7-M
- Support DDR2 533 SODIMM up to 2GB
- Support 1x DVI-I, 1x GbE, 1x 2.5" SATA HDD, 1x eSATA, 4x USB and Audio
- Support CompactFlash Type II Socket, 2x COMs and Digital I/Os

Product Specifications

	QBOX-1010
Construction	Aluminum extrusion
System Board	Proprietary motherboard, Intel® Atom N270 Processor , 945GSE / ICH7-M
Memory	DDR2 533 SO-DIMM up to 2GB
I/O Panel	<p>Front I/O panel</p> <ul style="list-style-type: none"> 1x Phone Jack for Line-Out 1x Phone Jack for MIC-In 1x Push button for power on/off 1x Push button for reset 1x POWER LED 1x HDD LED 2x USB2.0 1x eSATA connector <p>Rear I/O panel</p> <ul style="list-style-type: none"> 1x DC JACK for DC12V input 1x DVI-I connector for CRT & DVI output 2x USB2.0 1x RJ-45, GbE port 2x DB9 male connectors for COMs (2x RS-232/422/485, 5V/12V voltage selected by BIOS setting) 1x DB9 female connector for digital I/Os
Storage	1x 2.5" SATA HDD or 1x Internal Compact Flash Type II slot
Power Supply	<p>Input: 100-240 VAC, 50-60 Hz</p> <p>Output: 30W, 12VDC , 2.5A</p>
Expansion Slot	None
Cooling	Fanless and Internal Heat Pipes
Temperature/ Humidity	<p>Operating: 0°C to 40°C, 0%-90%, non-condensing</p> <p>Storage: -20°C to 80°C, 0%-90%, non-condensing</p>
Dimensions	130 x 40 x 110 mm (WxHxD)
Weight	750 g
Mounting	Desktop, VESA-mount, DIN-Rail mount
Certification	CE, FCC Class A

Table 1 QBOX-1010 product specifications

■ System tour

Refer to the diagrams below to identify the components of the system.

■ Front Panel



Figure 1 Front Panel

eSATA eSATA

The eSATA connector provides an external connectivity for mass storage devices.



CAUTION

This connector do not support hot-swapping. Users should not connect or disconnect their eSATA devices from PC when the system is working.



USB

The USB (Universal Serial Bus) port is compatible with USB devices such as keyboards, mouse devices, cameras, and hard disk drives. USB allows many devices to run simultaneously on a single computer, with some peripheral acting as additional plug-in sites or hubs.

**MIC-IN**

The microphone jack is designed to connect the microphone used for video conferencing, voice narrations, or simple audio recordings.

**Audio Out**

The stereo headphone jack (3.5mm) is used to connect the system's audio out signal to amplified speakers or headphones.

**Power LED**

The power LED will light when the PC is power-on.

**HDD LED**

The hard disk LED blinks when data is being written into or read from the HDD.

**Reset Button**

To reset the computer, use the tip of a pen to press the Reset button briefly (for less than three seconds).

**Power Switch**

The power switch allows powering ON and OFF the system.

■ Rear Panel

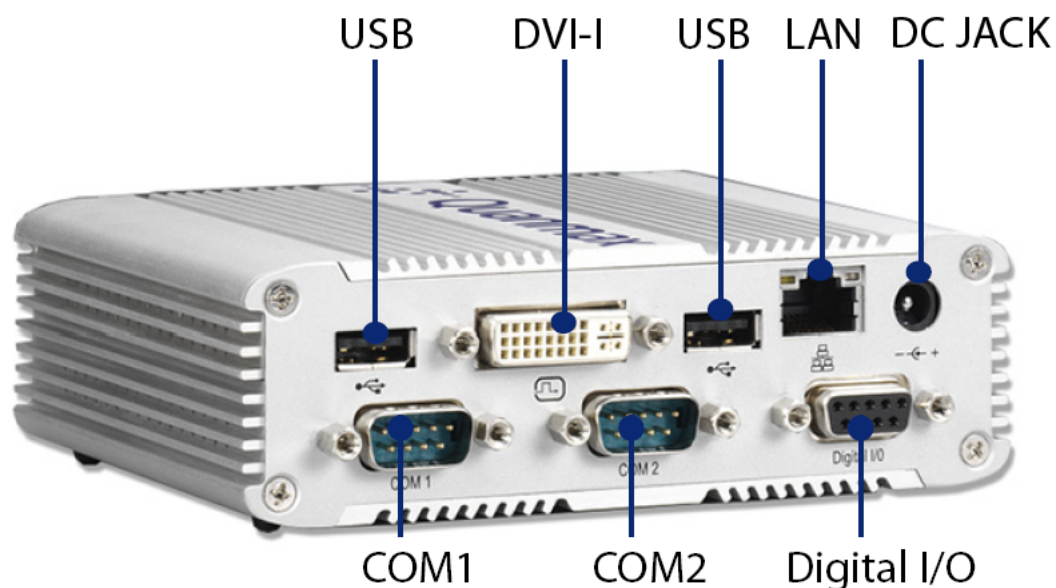


Figure 2 Rear Panel



USB

The USB (Universal Serial Bus) port is compatible with USB devices such as keyboards, mouse devices, cameras, and hard disk drives. USB allows many devices to run simultaneously on a single computer, with some peripheral acting as additional plug-in sites or hubs.



DVI Port

The Digital Visual Interface (DVI-I) port supports a high quality VGA-compatible device such as a monitor or LCD TV to allow viewing on a larger external display.



Ethernet

The eight-pin RJ-45 LAN port supports a standard Ethernet cable for connection to a local network.

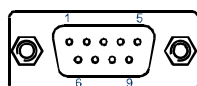


DC Jack (9-24V DC-IN)

The supplied power adapter converts AC power to DC for use with this jack. Power supplied through this jack supplies power to the PC. To prevent damage to the PC, always use the supplied power adapter.

COM1/COM2

Those two DB-9 male connectors support RS-232/422/485, 5V & 12V selected by BIOS setting, and output current 1A.



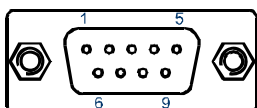
Pin	RS232	RS422	RS485 Half Duplex
1	DCD, Data carrier detect	TX-	DATA-
2	RXD, Receive data	RX+	N/A
3	TXD, Transmit data	TX+	DATA+
4	DTR, Data terminal ready	RX-	N/A
5	GND, ground	GND	GND
6	DSR, Data set ready	N/A	N/A
7	RTS, Request to send	N/A	N/A
8	CTS, Clear to send	N/A	N/A
9	+5V / +12V / RI, Ring indicator*	N/A	N/A

[FEN YING SM1001P01012PN]

*The function can be selected by BIOS setting

Digital I/O

The DB-9 female connector supports 4-bits input & 4-bits output, 5V and output current 1A.

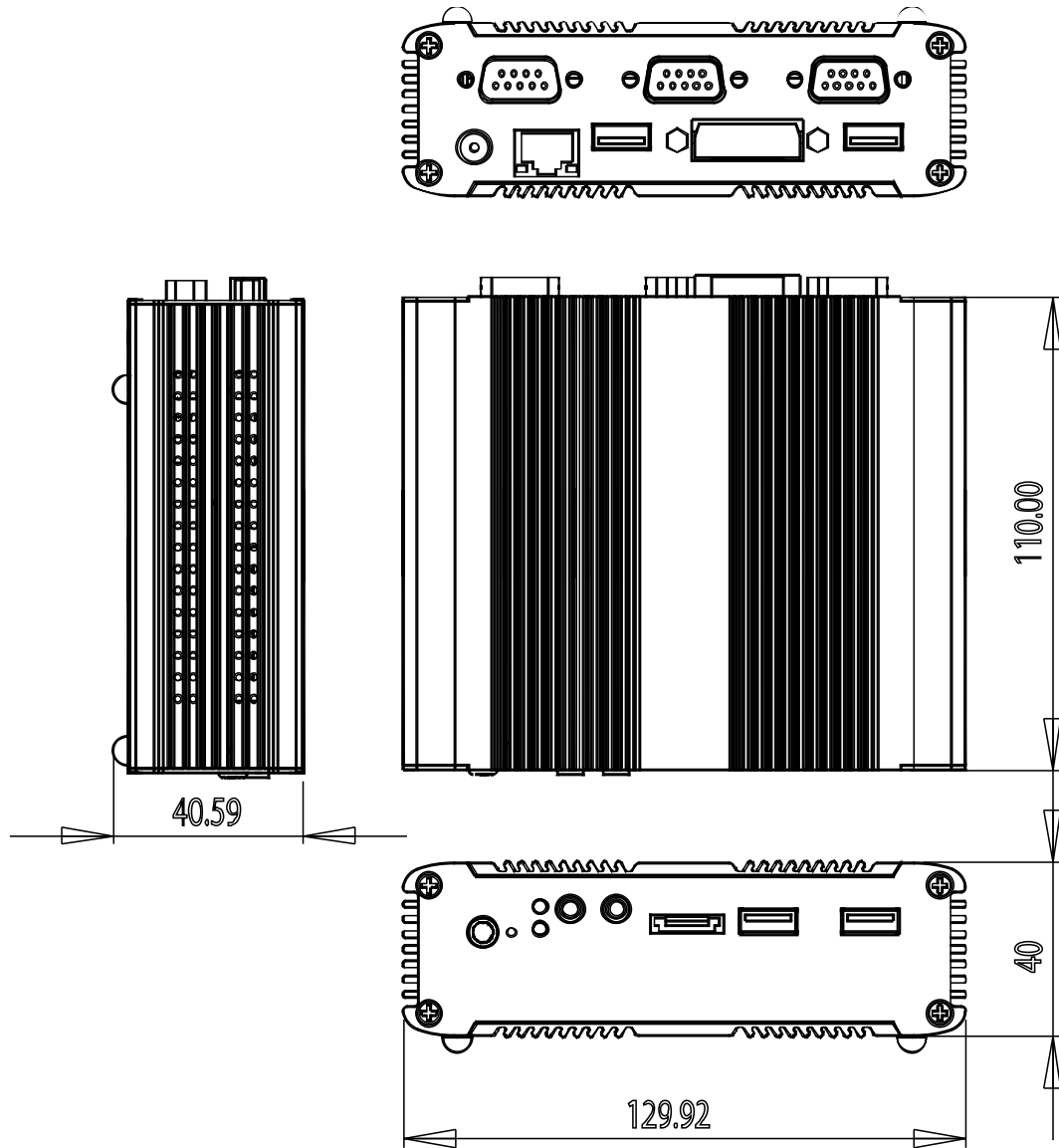


DB-9
(Female Connector)

Pin	Signal
1	Digital Output 0
2	Digital Input 0
3	Digital Output 1
4	Digital Input 1
5	Digital Output 2
6	Digital Input 2
7	Digital Output 3
8	Digital Input 3
9	+5V
Screw	GND

[FEN YING DSM1001S01011PN]

■ Mechanical Dimensions



Dimensions in millimeters

Figure 3 Mechanical Dimensions

Chapter 2

Getting Started

■ Setting up your PC

■ Connect the monitor, mouse and keyboard

Connecting the monitor

Connect the DVI cable from your display to the DVI port.

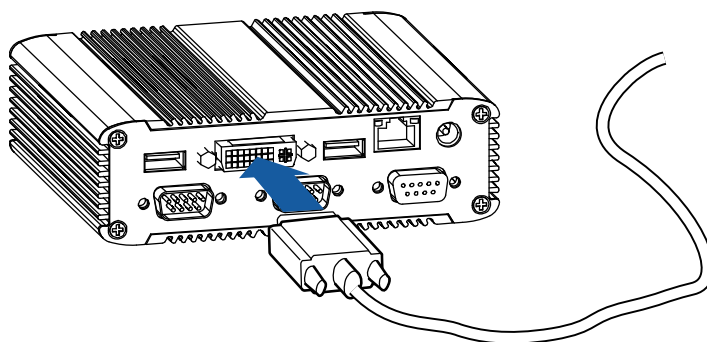


Figure 4 Connect the DVI cable

NOTE



To connect a VGA display, you need the DVI to VGA adapter to connect a display with a VGA connector.

NOTE



When the system reboots without connecting the DVI, there might be no image on screen when you insert the DVI cable. Please pressing **<Ctrl>+<Alt>+<F4>** simultaneously to show the image on screen.

Connecting USB mouse & keyboard

Your QBOX-1010 does not come with a keyboard and mouse, but you can use any USB keyboard or mouse with your computer.

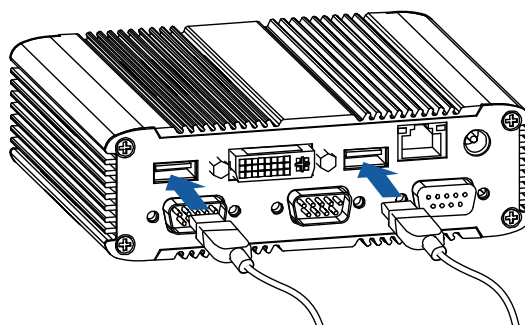


Figure 5 Connecting USB mouse & keyboard

NOTE



Using a third-party USB mouse or keyboard may require software drivers. Check the manufacturer's website for the latest software drivers.

■ Connecting to a network device

Connect one end of a network cable to the LAN port on the system rear panel and the other end to a hub or switch.

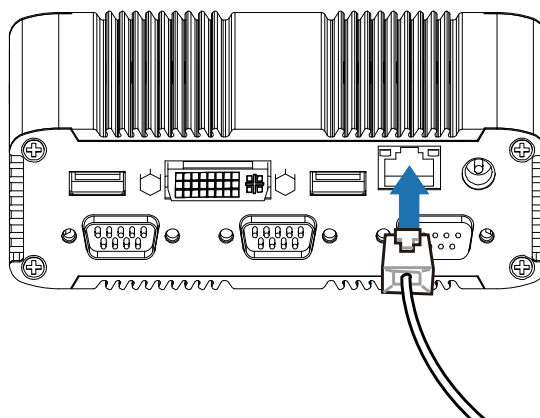


Figure 6 Network cable with RJ45 connector

■ Turning on the system

1. Connect the power adapter cable to the DC jack (DC IN) of the QBOX-1010
2. Connect the power cable to the power adapter
3. Connect the power cable to a power outlet
4. Press the power switch on the front panel to turn on the system

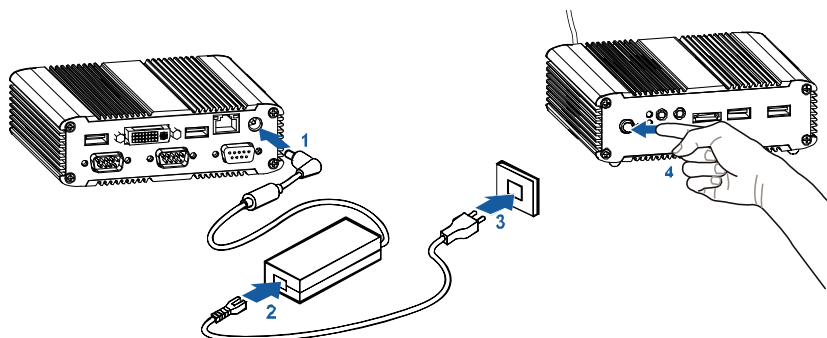


Figure 7 Turing on the system

■ Mounting your PC to a monitor

1. Secure the VESA mounting kit (optional accessory) to your monitor with four screws.

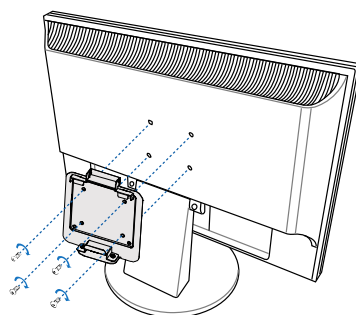


Figure 8 VESA mounting (1)

NOTE



To fasten the metal shelf, your monitor must comply with VESA75 or VESA100 standard.

2. Place the QBOX-1010 on the VESA mounting kit and make sure the computer is fitting well on the bracket.

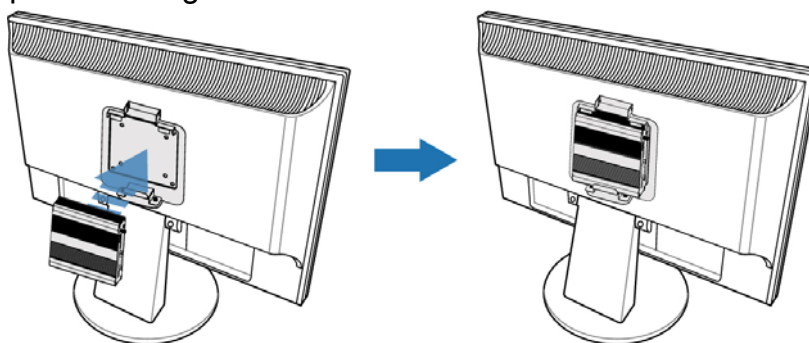
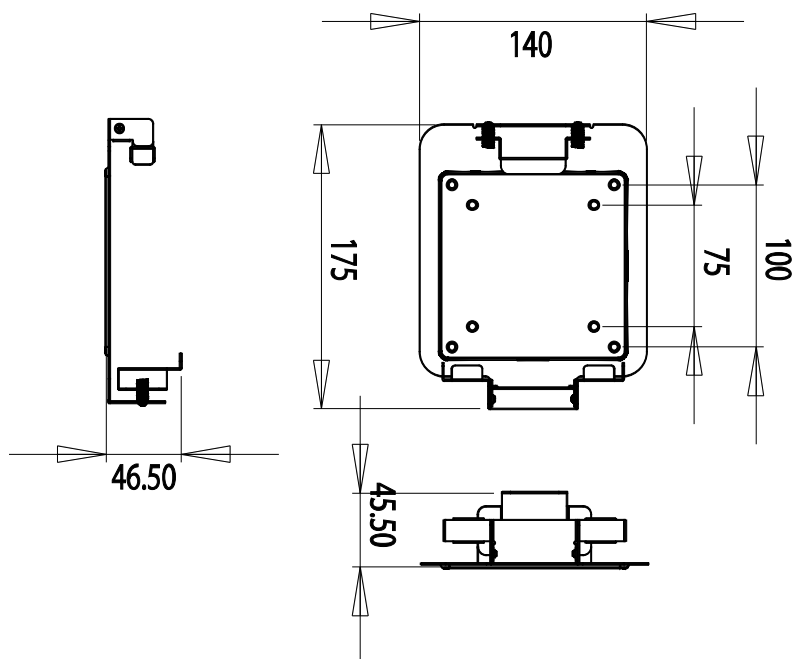




Figure 9 VESA mounting (2)

VESA Mounting Kit Dimension



■ Install your DIN-Rail Mounting Kit

1. Secure the DIN-Rail mounting kit “A” (optional accessory) to your system with 3x M3x6 round head screws. 
2. Secure the DIN-Rail mounting kit “B” (optional accessory) to DIN-Rail mounting kit “A” with 3x M3X4 flat head screws. 

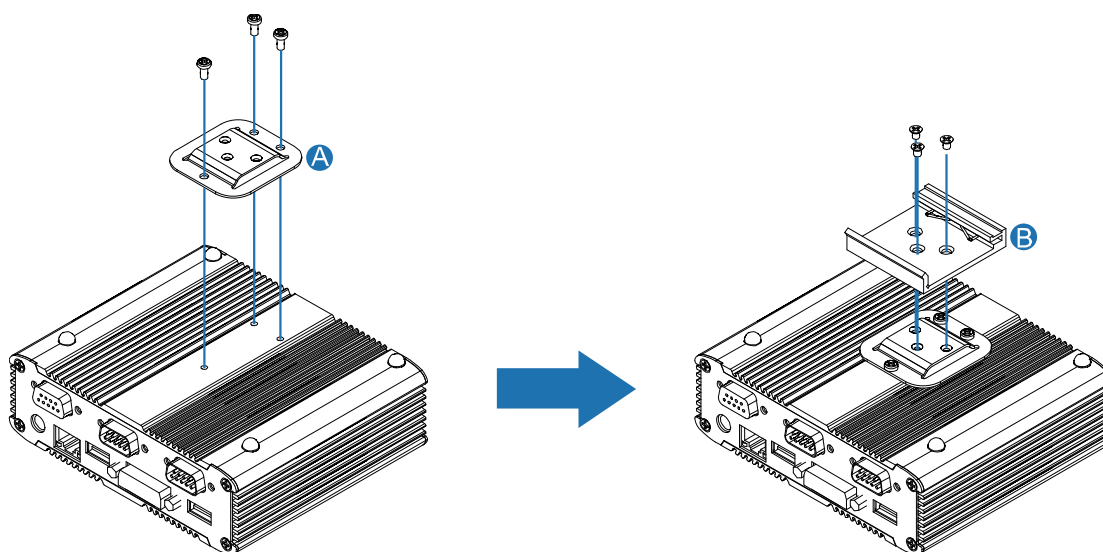


Figure 10 DIN-Rail mounting (1)

3. Clip the system onto the DIN rail as shown below.

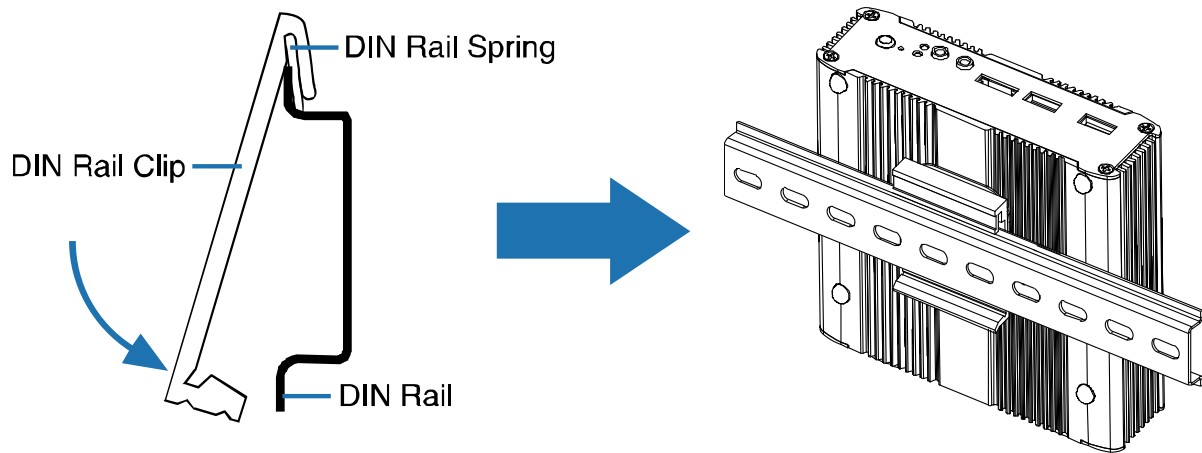


Figure 11 DIN-Rail mounting (2)

Chapter 3

AMI BIOS Setup

■ Overview

This chapter provides a description of the AMI BIOS. The BIOS setup menus and available selections may vary from those of your product. For specific information on the BIOS for your product, please contact Quanmax.



NOTE: The BIOS menus and selections for your product may vary from those in this chapter. For the BIOS manual specific to your product, please contact Quanmax

AMI's ROM BIOS provides a built-in Setup program, which allows the user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS, so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will not need to be changed unless there is a configuration change in the system, such as a hard drive replacement or when a device is added.

It is possible for the CMOS battery to fail, which will cause data loss in the CMOS only. If this happens you will need to reconfigure your BIOS settings.

■ Main Menu

The BIOS Setup is accessed by pressing the DEL key after the Power-On Self-Test (POST) memory test begins and before the operating system boot begins. Once you enter the BIOS Setup Utility, the Main Menu will appear on the screen. The Main Menu provides System Overview information and allows you to set the System Time and Date. Use the “<” and “>” cursor keys to navigate between menu screens.

Table 2 BIOS Main Menu

BIOS SETUP UTILITY			
Main	Advanced	Boot	Chipset Power Security Exit
System Date		[Wed 07/03/2009]	Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
System Time		[10:18:15]	
> Primary IDE Master		:[Not Detected]	Use [+] or [-] to configure system Time.
> Primary IDE Slave		:[Not Detected]	
> Secondary IDE Master		:[Not Detected]	
> System Information			<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
V02.61 (C)Copyright 1985-2006, American Megatrends, Inc.			

Below table is described for Primary IDE Master, Primary IDE Slave, Secondary IDE Master setting.

Table 3 IDE Device Setting Menu

BIOS SETUP UTILITY			
Main			
Primary Master			Disable: Disables LBA Mode.
Device		:Not Detected	Auto: Enables LBA Mode if the device supports it and the device is not already formatted with LBA Mode disabled.
LBA/ Large Mode		[Auto]	<> Select Screen
DMA Mode		[Auto]	↑↓ Select Item
S.M.A.R.T		[Auto]	+- Change Field
			Tab Select Field
			F1 General Help
			F10 Save and Exit
			ESC Exit
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LBA/ Large Mode [Auto]

Enables or disables the LBA (Logical Block Addressing)/ Large mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was

not previously formatted with LBA mode disabled.

Options: Disabled, Auto

DMA Mode [Auto]

Options: Auto

S.M.A.R.T [Auto]

SMART stands for Smart Monitoring, Analysis, and Reporting Technology. It allows AMIBIOS to use the SMART protocol to report server system information over a network.

Options: Auto, Disabled, Enabled

Table 4 System Information

BIOS SETUP UTILITY	
Main	
BIOS Version : 0.03 Build Date: :06/25/09 Processor Intel® ATOM™ CPU N270 @ 1.60GHz Speed :1600MHz Count :1 System Memory Size :1016MB	<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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■ Advanced Menu

Table 5 Advanced Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	Exit
<div>Advanced Settings</div> <div>Warning: Setting wrong values in below sections may cause system to malfunction.</div> <div>> I/O Configuration</div> <div>> OnBoard Peripherals Configuration</div> <div>> Hardware Health Configuration</div>					<div><> Select Screen</div> <div>↑↓ Select Item</div> <div>+ - Change Field</div> <div>Tab Select Field</div> <div>F1 General Help</div> <div>F10 Save and Exit</div> <div>ESC Exit</div>	
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Press <Enter> to select a sub-menu for detailed options.

Table 6 OnBoard I/O Configuration Settings

BIOS SETUP UTILITY		
Advanced		
OnBoard I/O Configuration		Allows BIOS to Select Serial Port1 Base Address. <

COM1 Address [3F8/IRQ4]

Options: Disabled, 3F8/IRQ4, 3E8/IRQ4, 2E8/IRQ3

COM1 Function Type [RS232]

Options: RS232, RS422, RS485

COM1 RI PIN Voltage [Normal]

Options: Normal, 5V, 12V

COM2 Address [2F8/IRQ3]

Options: Disabled, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3

COM2 Function Type [RS232]

Options: RS232, RS422, RS485

COM2 RI Pin Voltage [Normal]

Options: Normal, 5V, 12V

Table 7 OnBoard Peripherals Configuration Settings

BIOS SETUP UTILITY		
Advanced		
OnBoard Peripherals Configuration Settings		Options
USB Controller	[Enabled]	Disabled
USB 2.0 Controller	[Enabled]	Enabled
Audio Controller	[Enabled]	<> Select Screen
Onboard LAN Controller	[Enabled]	↑↓ Select Item
Onboard LAN OPTROM	[Disabled]	+ - Change Field
		Tab Select Field
		F1 General Help
		F10 Save and Exit
		ESC Exit
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USB Controller [Enabled]

Options: Enabled, Disabled

USB 2.0 Controller [Enabled]

Options: Enabled, Disabled

Audio Controller [Enabled]

Options: Enabled, Disabled

Onboard LAN Controller [Enabled]

Options: Enabled, Disabled

Onboard LAN OPTROM [Disabled]

Options: Enabled, Disabled

Table 8 Hardware Health Configuration

BIOS SETUP UTILITY		
Advanced		
Hardware Health Configuration		Disabled
CPU Shutdown Temperature	[Disabled]	80°C/176°F
CPU Temperature	:43°C/ 109°F	85°C/185°F
		90°C/194°F
+VCORE	:1.196 V	95°C/203°F
+VIN	:12.35 V	
+5.00V	:4.958 V	
		<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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Boot Menu

Table 9 Boot Menu

BIOS SETUP UTILITY		
Main	Advanced	Boot
Boot Settings > Boot Device Priority > Hard Disk Drives Quick Boot [Enabled] Full Screen LOGO Display [Disabled] Bootup Num-Lock [ON] Wait For 'F1' If Error [Enabled] Hit 'DEL' Message Display [Enabled]		Specifies the Boot Device Priority sequence. <> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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Boot Device Priority

The items allow you to specify the Boot Device Priority sequence.

Hard Disk Drives

The items allow you to specify the Boot Device Priority sequence from available Removable Drives.

Full Screen LOGO Display [Disabled]

Options: Disabled, Enabled

Quick Boot [Enabled]

Enabling this item allows BIOS to skip some Power On Self Tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.

Options: Disabled, Enabled

Bootup Num-Lock [On]

Allow you to select the power-on state for the NumLock.

Options: Off, On

Wait for 'F1' If Error [Enabled]

When set to Enabled, the system waits for F1 key to be pressed when error occurs.

Options: Disabled, Enabled

Hit 'DEL' Message Display [Enabled]

When set to Enabled, the system displays the message 'Press DEL to run Setup' during POST.

Options: Disabled, Enabled

■ Chipset Menu

Table 10 Chipset Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	Exit
<div>Chipset Settings</div>					<div>Options</div>	
DRAM Frequency		[Auto]			Auto 400 MHz 533 MHz	
Internal Graphics Mode Select		[Enabled, 8MB]			<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
DVMT Mode Select		[DVMT Mode]				
DVMT/FIXED Memory		[128M]				
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DRAM Frequency [Auto]

Options: Auto, 400 MHz, 533MHz

Internal Graphics Mode Select [Enabled 8MB]

Select the amount of system memory used by the Internal graphics device.

Options: Enabled 1MB, Enabled 8MB

DVMT Mode Select [DVMT Mode]

Options: Fixed Mode, DVMT Mode, Combo Mode

DVMT/FIXED Memory [128MB]

Options: 64MB, 128MB, Maximum DVMT

■ Power Menu

Table 11 Power Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	Exit
<div>Power Management Setting</div> <div>ACPI Function [Enabled]</div> <div>Suspend mode [S3 (STR)]</div> <div>Repost Video on S3 Resume [No]</div> <div>Suspend Time Out [Disabled]</div> <div>Restore on AC Power Loss [Power Off]</div> <div>Resume By USB Device [Disabled]</div> <div>Resume By PCI-E Device [Disabled]</div> <div>Resume On RTC Alarm [Disabled]</div>					<div>Select the ACPI state used for System Suspend</div> <div><> Select Screen</div> <div>↑↓ Select Item</div> <div>+ - Change Field</div> <div>Tab Select Field</div> <div>F1 General Help</div> <div>F10 Save and Exit</div> <div>ESC Exit</div>	
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ACPI Function [Enabled]

Enable/ Disable ACPI support for Operating System.

ENABLE: If OS supports ACPI, DISABLE: IF OS Does not support ACPI.

Suspend mode [S3 (STR)]

Options: S1 (POS), S3 (STR)

Repost Video on S3 Resume [No]

Determines whether to invoke VGA BIOS post on S3/STR resume.

Options: No, Yes

Suspend Time Out [Disabled]

Options: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 50 Min, 60 Min

Restore On AC Power Loss [Power Off]

Options: Power Off, Power On, Last State

Resume By USB Device [Disabled]

Options: Disabled, Enabled

Resume By PCI-E Device [Disabled]

Options: Disabled, Enabled

Resume On RTC Alarm [Disabled]

Options: Disabled, Enabled

■ Security Menu

Table 12 Security Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	Exit
<u>Security Setting</u> Supervisor Password :Not Installed User Password :Not Installed Change Supervisor Password Change User Password					Install or Change the password. <> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
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Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen displays the default Not Installed. After you have set a password, this item displays Installed.

Change User Password

Select this item to set or change the user password. The User Password item on top of the screen displays the default Not Installed. After you have set a password, this item displays Installed.

■ Exit Menu

Table 13 Exit Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	Exit
<div><div>Exit Setting</div><div><div>Save Changes and Exit</div><div>Discard Changes and Exit</div><div>Discard Changes</div><div>Load Optimal Defaults</div><div>Load Failsafe Defaults</div></div></div>					<div>Exit System Setup after saving the changes.</div> <div>F10 key can be used for this operation.</div> <div><> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit</div>	
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Save Changes and Exit

Exit system setup after saving the changes. Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. The CMOS RAM is sustained by an onboard backup battery and stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select [Yes] to save changes and exit.

Discard Changes and Exit

Exit system setup without saving any changes. Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than system date, system time, and password, the BIOS asks for a confirmation before exiting.

Discard Changes

Discards changes done so far to any of the setup values. This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select [Yes] to discard any changes and load the previously saved values.

Load Optimal Defaults

Load Optimal Default values for all the setup values. This option allows you to load optimal default values for each of the parameters on the Setup menus, which will provide the best performance settings for your system. The F9 key can be used for this operation.

Load Failsafe Defaults

Load Optimal Default values for all the setup values. This option allows you to load failsafe default values for each of the parameters on the Setup menus, which will provide the most stable performance settings. The F8 key can be used for this operation.

Chapter 4

Driver Installation

If your QBOX-1010 does not come with an operating system pre-installed, you will need to install an operating system and the necessary drivers to operate it. After you have finished assembling your system and connected the appropriate power source, power it up using the power supply and install the desired operating system. You can download the drivers for the QBOX-1010 from the Quanmax website at www.quanmax.com and install as instructed there. For other operating systems, please contact Quanmax.

Appendix A

DIO (Digital I/O) Sample Code

```
//=====
//QBOX-1010 DOS DIO sample program
//Please compile with Turbo C 3.0 to utilized the program
//=====
void main(){
    int RetVal;
    outp(0x2E,0x87);
    outp(0x2E,0x01);
    outp(0x2E,0x55);
    outp(0x2E,0x55);

    outp(0x2E,0x07);
    outp(0x2F,0x07);
    outp(0x2E,0x27);
    outp(0x2F,0xFF);
    outp(0x2E,0xc2);
    outp(0x2F,0xff);
    outp(0x2E,0xca);
    outp(0x2F,0xf0);

    //Reset Output Pins to all zero
    //IO Port: 0xa22
    //DIO_OUT 1 is bit 4
    //DIO_OUT 2 is bit 5
    //DIO_OUT 3 is bit 6
    //DIO_OUT 4 is bit 7
    RetVal=inp(0xa22);
    RetVal=RetVal&0x0f;
    outp(0xa22,RetVal);

    system("pause");

    //Turn on all Output Pins to all
    RetVal=inp(0xa22);
    RetVal=RetVal|0xf0;
    outp(0xa22,RetVal);
    system("pause");

    //Read Input pins
    //IO Port: 0xa22
    //DIO_IN 1 is bit 0
    //DIO_IN 2 is bit 1
    //DIO_IN 3 is bit 2
    //DIO_IN 4 is bit 3
    RetVal=inp(0xa22);
    RetVal=RetVal&0x0F;
    printf("DI 1-4= %d",RetVal);
    system("pause");
}
```

Appendix B

WatchDog Timer Sample Code

```
//=====
//QBOX-1010 DOS watchdog sample program
//Please compile with Turbo C 3.0 to utilized the program
//=====

int main()
{
//Initialized the WDT program
outp(0x2e,0x87);
outp(0x2e,0x01);
outp(0x2e,0x55);
outp(0x2e,0x55);

//Setting Logical Device Number to 0x07
outp(0x2e,0x07);
outp(0x2f,0x07);

//Set Timer Value(0x73 is LSB while 0x74 is MSB)
outp(0x2e,0x73);
outp(0x2f,0x14);//set to 20 sec (0x14)

//Set Timer Unit to Second/Minute(Bit 7 equal to 1 is second/0 is minute)
//Enable WDT (Bit 6 equal to 1 is enable/0 is disable)
outp(0x2e,0x72);
outp(0x2f,0xd0);//The unit is set as second
return 0;
}
```